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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,545	09/27/2001	Frederick M. Discenzo	01AB121	3887

7590 12/28/2005

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ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/965,545
Filing Date: September 27, 2001
Appellant(s): DISCENZO ET AL.

John M. Ling
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 9/26/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1, 19 and 22** are rejected under 35 U.S.C. 102(e) as being unpatentable over McConnell et al. (US 6,002,232) (hereinafter McConnell).

3. As for claims 1 and 19, McConnell discloses a method and means for controlling a motorized system comprising:

measuring an attribute of the motorized system, the attribute comprises at least one of vibration, speed, temperature, pressure, and current in the motorized system (col. 6, lines 25-50, "As discussed above...operation or aging.");

diagnosing a health of the motorized system based on the measured attribute (col. 14, lines 50-58, "The rankings in...to be applied.");

providing a diagnostics signal based on the diagnosed health (robustness rank, noise rank and response time rank, Fig. 11);

prognosing a state of the motorized system based at least in part on the at least one sensed attribute and/or the diagnosed state (col. 8, lines 42-50; col. 7, lines 50-59);

providing a control signal based on the diagnosed health (command input 124, Fig. 11); and

providing a feedback operation that adjusts the control signal to extend the lifetime of the motorized system to a specific time horizon (reducing vibration inherently extends the lifetime of the system over a specific time horizon; Fig. 10; feedback comparator 132, Fig. 11; reducing unwanted vibrations; col. 1, lines 5-19; col. 1, line 62 – col. 2, line 4; col. 4, lines 35-37; col. 6, lines 16-37; col. 7, line 51 – col. 8, line 16; col. 11, lines 48-63; col. 13, lines 6-23).

4. As for claim 22, McConnell discloses a system comprising:

a motorized system (physical system 26, Fig. 2; col. 6, line 66 – col. 7, line 16, "The methods and...cam mechanisms, etc.");

a communications link coupled to the motorized system (Fig. 11); and

a control system coupled to the communications link comprising:

a controller coupled to the communications link adapted to operate the motorized system in a controlled fashion (control system122, Fig. 11);

a diagnostics system coupled to the communications link adapted to diagnose the health of the motorized system according to at least one measured attribute associated with the motorized system, the measured attribute comprises at least one of vibration, speed, temperature, pressure, and current in the motorized system (robustness rank 160, noise rank 162, response time rank 164, Fig. 11; col. 14, lines 50-58, "The rankings in...to be applied.");

a prognostics system coupled to the communications link that provides prognoses of future states of the motorized system based at least in part on the at least one sensed attribute and/or the diagnosed health and provides the prognoses to the control component (command input selector 166, Fig. 11; col. 8, lines 42-50; col. 7, lines 50-59); and

a feedback analysis component that adjusts the controller to increase motorized system life duration to a specific temporal point (reducing vibration inherently extends the lifetime of the system over a specific time horizon; Fig. 10; feedback comparator 132, Fig. 11; reducing unwanted vibrations; col. 1, lines 5-19; col. 1, line 62 – col. 2, line 4; col. 4, lines 35-37; col. 6, lines 16-37; col. 7, line 51 – col. 8, line 16; col. 11, lines 48-63; col. 13, lines 6-23).

5. **Claims 1- 5, 18-22, 24, 30, 35-38, 40 and 41** are rejected under 35 U.S.C. 102(e) as being unpatentable over Madhavan (US 6,004,017).

6. As for claims 1 and 19, Madhavan discloses a method and means for controlling a motorized system comprising:

measuring an attribute of the motorized system, the attribute comprises at least one of vibration, speed, temperature, pressure, and current in the motorized system (col. 2, lines 39-42, "The method includes...changes in the function.");

diagnosing a health of the motorized system based on the measured attribute (col. 2, lines 39-42, "The method includes...changes in the function.");

providing a diagnostics signal based on the diagnosed health (col. 2, lines 42-46, "The method also...limit cycle oscillations.");

prognosing a state of the motorized system based at least in part on the at least one sensed attribute and/or the diagnosed state (col. 2, lines 38-46, "In carrying out...limit cycle oscillations.");

providing a control signal based on the diagnosed health (col. 2, lines 47-52, "Still further in...on the classifier signal.").

providing a feedback operation that adjusts the control signal to extend the lifetime of the motorized system to a specific time horizon (it is inherent that the system of Madhavan provides continuous diagnostics and control during real-time operation for the purpose of extending the operating life of the system; col. 1, lines 37-63; col. 2, lines 37-47; col. 2, lines 61-64; col. 3, lines 7-27; col. 3, lines 47-55).

7. As for claim 2, Madhavan discloses the method of claim 1, further comprising operating the motorized system according to the diagnostics signal (col. 2, lines 37-52, "In carrying out...the classifier signal.").

8. As for claim 3, Madhavan discloses the method of claim 1, further comprising modifying a setpoint of the motorized system (considered inherent since modifying the spindle speed requires modifying the setpoint for that speed).

9. As for claim 4, Madhavan discloses the method of claim 1, wherein diagnosing

the health comprises obtaining a frequency spectrum of the measured attribute and analyzing the frequency spectrum to detect adverse operating conditions (col. 3, lines 7-27, "Chatter prediction using...provide such control."; col. 4, lines 38-52, "The time frequency...Hanning window.").

10. As for claim 5, Madhavan discloses the method of claim 4, wherein analyzing the frequency spectrum comprises analyzing the frequency spectrum to detect faults, component wear and component degradation (col. 1, lines 37-45, "The development of chatter...productivity and quality."; col. 3, lines 7-27, "Chatter prediction using...provide such control.").

11. As for claim 18, Madhavan discloses the method of claim 1, wherein the measuring attribute comprises receiving measurements from at least one sensor (inherent for detecting spindle speed input and vibration signals, Fig. 2).

12. As for claim 20, Madhavan discloses the control system of claim 19, further comprising:

means for modifying operation of the motorized system based on the diagnostic signal (col. 2, lines 37-52, "In carrying out the above...on the classifier signal.").

13. As for claim 21, Madhavan discloses the control system of claim 19, further comprising:

means for modifying operation of the motorized system based on the control signal (col. 2, lines 37-52, "In carrying out the above...on the classifier signal.").

14. As for claim 22, Madhavan discloses a system comprising:

a motorized system (col. 1, lines 38-45, "The development of...productivity and quality.");

a communications link coupled to the motorized system (Fig. 4); and

a control system coupled to the communications link comprising:

a controller coupled to the communications link adapted to operate the motorized system in a controlled fashion (col. 5, lines 45-49, "Fig. 5 is a...as noted above.");

a diagnostics system coupled to the communications link adapted to diagnose the health of the motorized system according to at least one measured attribute associated with the motorized system, the measured attribute comprises at least one of vibration, speed, temperature, pressure, and current in the motorized system (col. 2, lines 22-47, "Still another object...limit cycle oscillations.");

a prognostics system coupled to the communications link that provides prognoses of future states of the motorized system based at least in part on the at least one sensed attribute and/or the diagnosed health and provides the prognoses to the control component (col. 2, lines 38-46, "In carrying out...limit cycle oscillations."); and

a feedback analysis component that adjusts the controller to increase motorized system life duration to a specific temporal point (it is inherent that the system

of Madhavan provides continuous diagnostics and control during real-time operation for the purpose of extending the operating life of the system; col. 1, lines 37-63; col. 2, lines 37-47; col. 2, lines 61-64; col. 3, lines 7-27; col. 3, lines 47-55).

15. As for claim 24, Madhavan discloses the system of claim 22, wherein the motorized system comprises components, devices, subsystems and process controls (col. 1, lines 56-63, "The presence and...complicated random signal.").

16. As for claim 30, Madhavan discloses the system of claim 22, further comprising at least one sensor coupled to the motorized system and the communications link for measuring the at least one measured attribute (inherent for detecting spindle speed input and vibration signals, Fig. 2).

17. As for claim 35, Madhavan discloses the system of claim 22, wherein the control system is implemented on a computer system (col. 5, lines 45-49, "Fig. 5 is a...as noted above.").

18. As for claim 36, Madhavan discloses a system to facilitate controlling a motorized system, comprising:

at least one sensor that senses at least one attribute of the motorized system (col. 1, lines 56-58, "The presence and...appropriately placed accelerometers.");

a diagnostics system that diagnosis a state of the motorized system based at least in part on the at least one sensed attribute (col. 2, lines 38-46, "In carrying

out...limit cycle oscillations.");

a prognostic system that makes a prognosis of the motorized system based at least in part on the at least one sensed attribute and/or the diagnosed state (col. 2, lines 38-46, "In carrying out...limit cycle oscillations."); and

a controller that controls the motorized system based at least in part on the diagnosed state (col. 2, lines 47-52, "Still further in...the classifier signal.");

the diagnostics system further performs at least a second diagnosis of the state of the motorized system after corrective action is taken by the control component and ensures that the motorized system will function until a predetermined time horizon is reached (it is inherent that the system of Madhavan provides continuous diagnostics and control during real-time operation for the purpose of extending the operating life of the system; col. 1, lines 37-63; col. 2, lines 37-47; col. 2, lines 61-64; col. 3, lines 7-27; col. 3, lines 47-55).

19. As for claim 37, Madhavan discloses the system of claim 36, the controller controlling the motorized system based at least in part on the prognosis (col. 2, lines 38-46, "In carrying out...limit cycle oscillations.").

20. As for claim 38, Madhavan discloses the system of claim 37, the controller automatically adjusting operation of the motorized system based at least in part on the prognosed future states of the motorized system (col. 2, lines 38-46, "In carrying out...limit cycle oscillations.").

21. As for claim 40, Madhavan discloses the system of claim 36, the prognostic system inferring future operating states of the motorized system (col. 2, lines 22-31, "Still another object...the present invention.").

22. As for claim 41, Madhavan discloses the system of claim 36, the controller automatically adjusting an operating state of the motorized system based at least in part on the prognosis (col. 2, lines 38-46, "In carrying out...limit cycle oscillations.").

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

24. **Claims 6-8, 12-14, 25-29 and 42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Madhavan (US 6,004,017) in view of Hays et al. (US 6,260,004 B1).

25. As for claims 6-8, although obvious to one of ordinary skill in the art, Madhavan does not specifically disclose the method of claim 1 wherein the motorized system comprises a motorized pump nor a fan. However, Hays discloses a method similar to claim 1 which includes measuring an attribute associated with the motorized system

which may comprise a motorized pump, a fan, turbine, compressor, blower, or other motorized device (col. 8, lines 37-40, "The method of the...blowers and pumps.").

26. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Madhavan by measuring an attribute associated with the motorized system which may comprise a motorized pump, a fan, turbine, compressor, blower, or other motorized device, in order to detect and correct conditions that may lead to damage of these system, as taught by Hays (col. 2, lines 47-55, "Traditional condition monitoring...pump performance signature.").

27. As for claim 12, Madhavan discloses that various frequency analysis methods may be used (col. 5, lines 56-60, "Many alternative methods...a positive distribution."). These methods would obviously include analysis of amplitude as understood by one of ordinary skill in the art. However, Madhavan does not specifically disclose the method of claim 1, wherein diagnosing the health comprises analyzing an amplitude of a first spectral component of a frequency spectrum at a first frequency. Hays teaches a method similar to claim 1, wherein diagnosing the health comprises analyzing an amplitude of a first spectral component of a frequency spectrum at a first frequency (col. 1, line 66 – col. 2, line 14, "Rotating machines and pumps...the CSI Application paper.").

28. It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the teachings of Madhavan by analyzing an amplitude of a first spectral component of a frequency spectrum at a first frequency in order to detect and correct conditions that may lead to damage of the motorized system, as taught by Hays (col. 2, lines 47-55, "Traditional condition monitoring...pump performance signature.").

29. As for claims 13 and 14, Madhavan does not specifically disclose the method of claim 1 wherein providing the control signal comprises providing the control signal to increase or reduce cavitation. However, Hays teaches providing a control signal to increase or reduce cavitation in order to optimize pump performance (col. 8, lines 37-48, "The method of the...normal wear and tear."; col. 9, lines 27-34, "Hosts capable of using...to drive the pump."). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Madhavan by providing a control signal to increase or reduce cavitation in order to optimize the performance of a motorized pump, as taught by Hays (col. 8, lines 37-48, "The method of the...normal wear and tear."; col. 9, lines 27-34, "Hosts capable of using...to drive the pump.")

30. As for claim 25, Madhavan does not specifically disclose the system of claim 24, wherein the components comprise bearings, the devices comprise a motor, pump and fan, the subsystems comprise a motor drive-pump and process controls comprise a pump fluid control. Hays discloses a system similar to claim 25, wherein the components comprise bearings, the devices comprise a motor, pump and fan, the subsystems comprise a motor drive-pump and process controls comprise a pump fluid

control (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Madhavan such that the components comprise bearings, the devices comprise a motor, pump and fan, the subsystems comprise a motor drive-pump and process controls comprise a pump fluid control in order to provide a diagnostic system for a motorized pump assembly, as taught by Hays (col. 8, lines 37-43, "The method of...head centrifugal pumps.").

31. As for claim 26, Madhavan does not specifically disclose a motorized system wherein the load comprises at least one of a valve, a pump, a conveyor roller, a fan, a compressor, and a gearbox. Hays discloses a system similar to claim 22, wherein the motorized system comprises a motor and a load, and wherein the load comprises at least one of a valve, a pump, a conveyor roller, a fan, a compressor, and a gearbox (Fig. 1; col. 8, lines 37-43, "The method of...head centrifugal pumps."). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Madhavan such that the load comprises at least one of a valve, a pump, a conveyor roller, a fan, a compressor, and a gearbox in order to provide a diagnostic system for a motorized pump assembly, as taught by Hays (col. 8, lines 37-43, "The method of...head centrifugal pumps.").

32. As for claim 27, Madhavan discloses the system of claim 24, wherein the diagnostics system provides a diagnostics signal (signal g(n), Fig. 4).

33. As for claim 28, Madhavan discloses the system of claim 27, wherein the diagnostics signal represents health of the motorized system and the control signal represents control information for the motorized system (col. 2, lines 37-52, "In carrying out...the classifier signal.").

34. As for claim 29, Madhavan discloses the system of claim 24, wherein the controller provides a control signal, wherein the control signal contains control information for controlling at least one of the components, the devices, the subsystems and the process controls (spindle speed control output sc(n), Fig. 2; col. 3, lines 18-27, "Using real data...provide such control.").

35. As for claim 42, Madhavan does not specifically disclose the controller scheduling preventive maintenance for the motorized system based at least in part on the prognosis. Hays teaches the controller scheduling preventive maintenance for the motorized system based at least in part on the prognosis (col. 2, lines 47-55, "Traditional condition monitoring...pump performance signature."). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Madhavan by scheduling preventive maintenance for the motorized system based at least in part on the prognosis in order to prevent damage to the system, as taught by Hays (col. 2, lines 47-55, "Traditional condition monitoring...pump performance signature.").

36. **Claims 15-17 and 31-34** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Madhavan in view of Edison et al (US 5,586,305) (hereinafter Edison).

37. As for claims 15-17 and 31-34, Madhavan does not specifically disclose transmitting signals via a wireless network. Edison teaches a transmitting signals over a wireless or other remote network in a distributed control system (col. 8, lines 48-65, "Fig. 8 is a...wireless or IR link."). It would have been obvious to one of ordinary skill in the art to modify the teachings of Madhavan such that the communication link comprises a wireless network and further to transmit one or more signals, including the control and diagnostic signals, via the wireless network, in order to control the process from a remote location, as taught by Edison (col. 8, lines 48-65, "Fig. 8 is a...wireless or IR link.").

38. **Claim 39** is rejected under 35 U.S.C. 103(a) as being unpatentable over Madhavan (US 6,004,017) in view of Grayson et al (US 5,111,531) (hereinafter Grayson).

39. Madhavan does not specifically disclose the prognostic system comprising a non-linear training system. However, Grayson teaches a control system similar to claim 36, wherein the prognostic system comprises a non-linear training system (col. 3, lines 15-23, "The trainable neural...a teaching algorithm."). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Madhavan by using a

prognostic system comprising a non-linear training system in order to predict and control at least one indirect process variable, as taught by Grayson (col. 2, line 52 – col. 3, line 2, "Briefly, according to this...indirectly controlled variable.").

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Response to Argument

A. Rejection of Claims 1, 19, and 22 Under 35 U.S.C. 102(e)

(1) Appellant's Argument: Appellant asserts on page 7 of the Brief that the subject claims set forth feedback-enabled control of a system to extend operating lifetime to a specific time horizon, rather than merely extending operating lifetime to some ambiguous future time. McConnell et al. does not describe such claimed aspects of the subject invention.

Examiner's Response (1): examiner respectfully disagrees. The examiner finds that this limitation is inherent to the McConnell reference. The explicit purpose of McConnell is a feedback operation (Fig. 2; col. 6, lines 16-24) that adjusts the control signal to reduce vibrations in the system (Fig. 10; feedback comparator 132, Fig. 11; reducing unwanted vibrations; col. 1, lines 5-19; col. 1, line 62 – col. 2, line 4; col. 4, lines 35-37; col. 6, lines 16-37; col. 7, line 51 – col. 8, line 16; col. 11, lines 48-63; col. 13, lines 6-23). Thus, by reducing such vibrations, McConnell inherently extends the lifetime of the motorized system to a specific time horizon, where a specific time horizon

recited in independent claims is broad limitation which includes various interpretations such as merely "extending mission completion" as described in the present specification on page 25, lines 1-3.

(2) Appellant's Argument: Appellant asserts on page 7 of the Brief that McConnell et al. does not disclose prognosing a state of a motorized system based on a diagnosed state of the system, but rather discusses employing a predicted value as determined from a table lookup to select a command signal that can be applied to a system to be a diagnosed subsequently.

Examiner's Response (2): The Examiner finds that this limitation is not actually recited in the claims. Rather, the claims recite "prognosing a state of the motorized ***based at least in part*** on the at least one sensed attribute ***and/or*** the diagnosed state." Thus, McConnell is only required to teach prognosing a state of the motorized system based at least in part on the at least one sensed attribute, as disclosed in col. 7, lines 50-59, and illustrated in Fig. 2.

(3) Appellant's Argument: Appellant asserts on page 7 of the Brief that McConnell et is not silent with regard to the aspect of "a feedback operation that adjusts the control signal to extend the lifetime of the motorized system to a specific time horizon", as set forth in the amended independent claims.

Examiner's Response (3): Examiner's Response (1): examiner respectfully disagrees. The examiner finds that this limitation is inherent to the McConnell reference.

The explicit purpose of McConnell is a feedback operation (Fig. 2; col. 6, lines 16-24) that adjusts the control signal to reduce vibrations in the system (Fig. 10; feedback comparator 132, Fig. 11; reducing unwanted vibrations; col. 1, lines 5-19; col. 1, line 62 – col. 2, line 4; col. 4, lines 35-37; col. 6, lines 16-37; col. 7, line 51 – col. 8, line 16; col. 11, lines 48-63; col. 13, lines 6-23). Thus, by reducing such vibrations, McConnell inherently extends the lifetime of the motorized system to a specific time horizon, where a specific time horizon recited in independent claims is broad limitation which includes various interpretations such as merely "extending mission completion" as described in the present specification on page 25, lines 1-3.

For all of these reasons claims 1, 19 and 22 are properly rejected under 35 U.S.C. 102(e) as being unpatentable over McConnell.

B. Rejection of Claims 1-5, 18-22, 24, 30, 35-38, 40 and 41 Under 35 U.S.C. 102(e)

(1) Appellant's Argument: As stated above with regard to Section I, the subject independent claims set forth the aspect of *extending motorized system function until a specific time horizon is reached* based on diagnostic and prognostic information related to system health. As set forth with regard to McConnell et al., Madhavan fails to disclose such aspect of the subject claims.

Examiner's Response (1): The Examiner finds that this limitation is not actually recited in the claims. Rather, the claim 36 recites "ensuring that a motorized system will function until a predetermined time horizon is reached". Thus, Madhavan is only

required to teach ensuring that a motorized system will function until a predetermined time horizon is reached (it is inherent that the system of Madhavan provides continuous diagnostics and control during real-time operation for the purpose of extending the operating life of the system; col. 1, lines 37-63; col. 2, lines 37-47; col. 2, lines 61-64; col. 3, lines 7-27; col. 3, lines 47-55).

(2) Appellant's Argument: Madhavan does not disclose adjusting a control signal to extend operating life to a specific time horizon as set forth in the subject independent claims.

Examiner's Response (2): "A specific time horizon" recited in independent claims is broad limitation which includes various interpretations such as merely "extending mission completion" as described in the present specification on page 25, lines 1-3. Therefore, Madhavan explicitly disclose adjusting a control signal to extend operating life to a specific time horizon (col. 1, lines 37-63; col. 2, lines 37-47; col. 2, lines 61-64; col. 3, lines 7-27; col. 3, lines 47-55).

C. Rejection of Claims 6-8, 12-14, 25-29, and 42 Under 35 U.S.C. 103(a)

(1) Appellant's Argument: As discussed above, independent claims 1, 22 and 36 set forth the aspect of a feedback operation that adjusts a control signal to manipulate system lifetime duration". Neither Madhavan nor Hays et al., teaches or suggest such aspect of the claimed invention, as discussed above is Sections I and II.

Examiner's Response (1): Madhavan properly anticipates all the limitations of

independent claims 1, 22, and 36 for the reasons cited above. Therefore, claims 6-8, 12-14, 25-29, and 42 are properly rejected under 35 U.S.C. 103(a) for the same reasons.

D. Rejection of Claims 15-17, and 31-34 Under 35 U.S.C. 103(a)

(1) Appellant's Argument: Claims 15-17 and 31-34 depend from independent claims 1 and 22 respectively. As discussed above in Sections I-III, Madhavan does not teach or suggest "a feedback operation *that adjusts a control signal to extend the lifetime of the motorized system to a specific time horizon*.

Examiner's Response (1): Madhavan properly anticipates all the limitations of independent claims 1 and 22 for the reasons cited above. Therefore, claims 15-17 and 31-34 are properly rejected under 35 U.S.C. 103(a) for the same reasons.

E. Rejection of Claim 39 Under 35 U.S.C. 103(a)

(1) Appellant's Argument: Claim 39 depends from independent claim 36, which, as discussed above in Section V, is not made obvious by Madhavan. Grayson et al, fails to overcome the deficiencies of Madhavan with respect to independent claim 36. Specifically, Grayson et al, does not teach or suggest a diagnostics system that "**ensures that the motorized system will function until a predetermined time horizon is reached**."

Examiner's Response (1): Appellant misinterprets the examiner's rejection. As stated in paragraphs 38 and 39 above, the Examiner does not relied on Grayson et al,

to teach or suggest a diagnostics system that "**ensures that the motorized system will function until a predetermined time horizon is reached**." Furthermore, Madhavan clearly teaches ensures that the motorized system will function until a predetermined time horizon is reached (it's inherently providing continuous diagnostics and control during real-time operation for the purpose of extending the operating life of the system; col. 1, lines 37-63; col. 2, lines 37-47; col. 2, lines 61-64; col. 3, lines 7-27; col. 3, lines 47-55). Therefore, Madhavan properly anticipates all the limitations of independent claim 36 for the reasons cited above. Therefore, claims 39 is properly rejected under 35 U.S.C. 103(a) for the same reasons.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jungwon Chang

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